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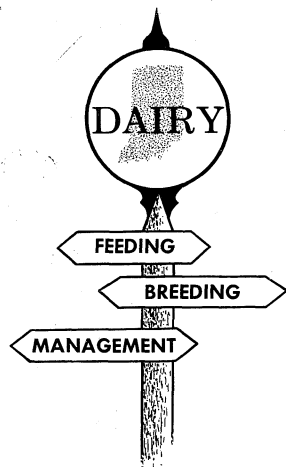
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Lead-Feeding Program for Dairy Cows

Merle Cunningham, Extension Dairyman

Introduction

Indiana milk production averages have steadily increased from year to year. The 1964-65 DHIA average was 11,936 pounds of milk per cow as compared to 9,682 pounds in 1954-55. It is evident that many cows are capable of producing 15,000 pounds of milk or more per lactation.

The biggest obstacle to overcome is inadequate feeding. How can the dairyman know what his cows are capable of producing if feed is the limiting item? Higher production will require higher intake of nutrients--particularly energy. Many dairymen can realize a higher income per cow over the additional feed cost by proper selection and feeding of economical rations.

Why Aren't Many Feeding Programs Adequate?

Feeding a dairy cow according to recommended standards is adequate only after the cow has reached peak milk production. The problem of feeding according to production in early lactation is simple; we are feeding only enough energy to maintain her present production rather than enough to allow for higher levels. For this reason, many cows lose excessive flesh in early lactation; they are using body fat to meet the increased demand for high milk production. Therefore, some feeding programs are actually "follow-feeding," or feeding energy after the demand occurred.

The Idea of "Lead-Feeding"

The practice of high energy feeding isn't very sound unless it is done properly. For example, the dairyman that is feeding his entire herd at a high energy level is usually overfeeding his low producers. This practice may result in more total milk production, but the extra milk may not pay for the extra feed. The poor cows tend to offset the profits made by the better ones.

The purpose of "lead-feeding" (or "Challenge-feeding") is to provide the energy needs ahead of the cow's demand by:

1. Encouraging the cow's intake of grain concentrates during the latter part of dry period and soon after calving. Most cows can't increase their appetite rapidly enough after calving to meet milk production demands unless they become accustomed to some grain concentrate feeding during the dry period.
2. Maintaining the cow in a good state of flesh during the dry period--thus, avoiding excessive weight losses during heavy milk production. Very high producers will lose some flesh in early lactation even when adequately fed.

Lead-feeding will challenge the cow to produce and allow her more milk because energy needs are more adequately met

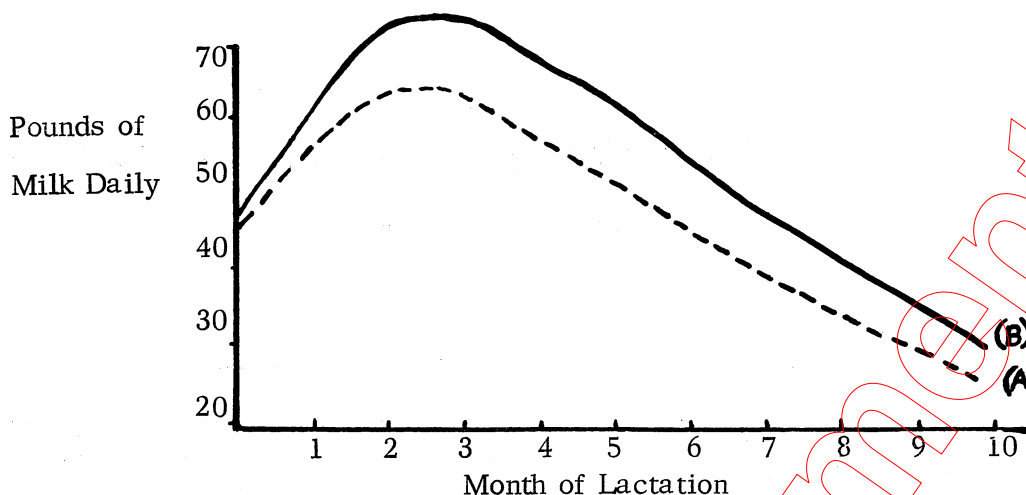


Figure 1. Lactation curve showing comparisons between a normal curve (a) and expected curve of a cow responding to lead-feeding (b) The increased production is the result of adequate energy provided during early lactation.

early in lactation. Many cows will respond favorably to lead-feeding reaching their highest level of milk production earlier in lactation (peak production). In addition, these cows tend to produce at peak production longer and maintain a higher level through most of the lactation. (Figure 1). Some cows can be expected to produce an additional 2000 pounds of milk or more during the lactation period under this system.

However, some cows will show little or no response to lead-feeding due to low appetites or low inherited ability to respond. Milk and feed records are needed to detect these cows early in lactation, otherwise, they cancel out the profit from the better cows.

Lead-feeding requires extremely good management demanding very close observation of each cow's physical condition, feed consumption and milk production.

How to Lead-Feed Your Cows

This system of feeding begins with the dry cow and continues until peak production is reached (Figure 2).

1. After the cow is dry, she should be maintained in good condition; neither too fat nor too thin. Good quality forage or fair quality forage plus 2-4 pounds of grain concentrate per day is usually adequate during the first 30 days of the dry period.

2. Begin increasing the grain concentrate at the rate of one to two pounds per head daily within 14-21 days prior to calving. Continue increasing until the amount fed per day is equal to 1.0 to 1.5 percent of body-weight. (Example: 12-18 pounds grain daily for a 1,200 pound cow)

3. Maintain the grain concentrate at the selected level through calving and for the first four days after calving. The cow's appetite may be lower during this period. In this case do not offer the cow more than she will readily consume during this period.

4. After the fourth day, gradually increase the grain concentrate at a rate of one to two pounds daily or according to the cow's appetite.

5. Continue increasing until peak production is obtained or the cow's appetite

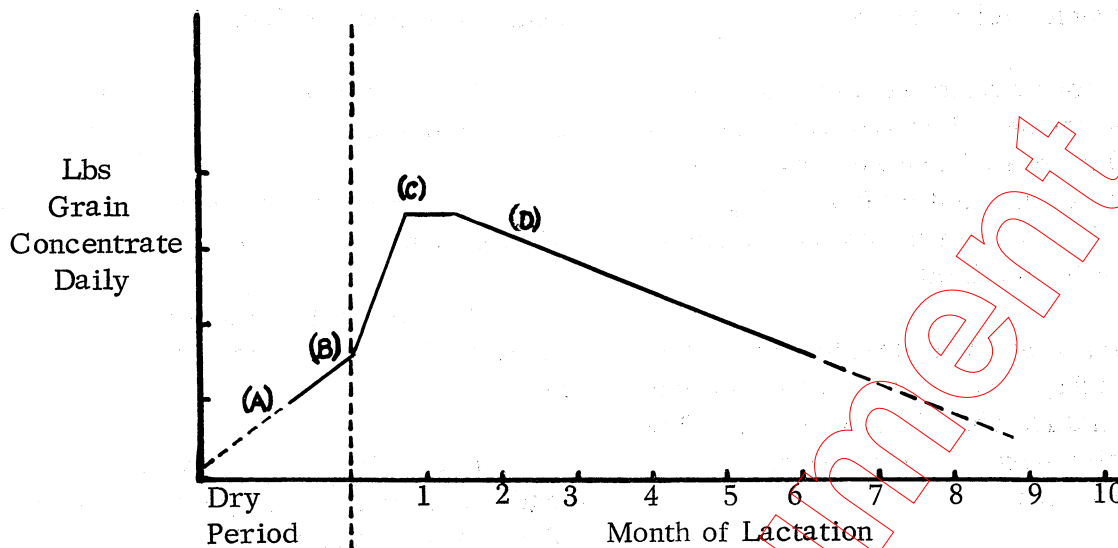


Figure 2. Graph showing (a) increased grain concentrate during dry period (b) grain concentrate level at 1.0 to 1.5 percent of bodyweight at calving (c) increasing grain concentrate until milk production peaks and decreases, or cow's appetite limits intake and (d) decreasing grain concentrate according to milk production.

limits her intake. Watch her appetite closely. Check milk production carefully to determine the cow's peak production.

Other Feeding Suggestions When Lead-feeding Dairy Cows

6. When peak production is reached, maintain the level of grain concentrate until production begins to drop. (Ignore temporary drops in production.) Then decrease the grain concentrate according to the decrease in daily production; for each 2.5 to 3.0 pounds decrease in milk production, decrease grain one pound or follow DHIA feeding recommendations.

7. Continue decreasing the grain concentrate level according to production. When forage quality changes drastically, adjust the level of grain feeding accordingly.

After peak production occurs, the normal decline in milk production is 8-10 percent per month or about .33 percent per day. Excessive decreases may be due to insufficient energy intake. This can be checked by increasing grain concentrate levels slightly. A change in feed intake will normally be reflected in milk yield within 24-30 hours.

Each cow must be watched closely for signs of overfeeding as the grain concentrate allowance is increased. Individual cows vary widely in their ability to consume higher levels of grain concentrates. Such signs as lowered feed consumption, scours, bloat or extreme panting may be indications of overfeeding. Each cow should be fed according to her physical condition and response.

When possible, always make changes in forages or grain concentrates gradually over a 2-3 week period or longer.

Do not discourage appetite prior to calving, but use extreme care with heifers due to calve. The upper level of grain concentrate feeding at 1.5 percent of bodyweight should be limited to cows of known high production with good appetites.

Do not make more grain concentrate available than the individual cow can consume.

If the cow fails to clean up feed, reduce to the point at which all is eaten.

Grain concentrate feeding should not force forage intake below 1.0-1.5 pounds of hay per 100 pounds of bodyweight (or the same amount of dry matter from silage or pasture). Milk fat depression may occur at low levels of forage intake.

Feeding grain concentrates more frequently each day may increase consumption. The grain mixture should be palatable. The addition of five percent molasses may increase palatability.

As forage consumption and quality decreases, greater attention to adequate vitamins and minerals is needed, particularly during winter months.

The Effects of Lead-feeding Upon:

Mastitis: Sufficient evidence is available which indicates that heavier grain concentrate feeding doesn't produce mastitis. In fact, New York data showed that the incidence of infection was reduced under high grain concentrate feeding. Management in milking procedures appears to be a much more important factor in controlling mastitis.

Udder edema: Many experiments show that udder edema is not due to high grain concentrate feeding. This condition is mainly due to a large accumulation of body fluid, or lymph, in the udder. It should not be confused with fatty udders which often occur in heavily-fed, over-fat heifers.

Acetonemia or Ketosis: Although there are few confirmed reports, there are numerous field reports which indicate that the incidence of ketosis was reduced when cows received higher levels of grain mixtures before and after calving. This may be because severe bodyweight losses are avoided during the period of high milk production. Consid-

erations that may aid in reducing the incidence of ketosis include:

1. Avoid getting cows extremely fat before calving.
2. Prevent excessive bodyweight loss after calving.
3. Avoid throwing the animal off-feed by excessive feeding or changing feeds abruptly.

Productive life: There isn't enough evidence to indicate long-range effects of high grain concentrate feeding. Relatively short-term experiments indicate no association between high grain concentrate feeding and herd health.

Economics of Grain Concentrate Feeding

The dairyman cannot assume that higher grain concentrate feeding is economical. Milk production and feed consumption records are essential for (1) determining which cows respond and (2) determining each cow's peak production in order to avoid wasteful feeding. By using these records, the dairyman can benefit by culling the unprofitable producers and adequately feeding his best producers.

From an economic standpoint, grain concentrate feeding should not be limited during early lactation to cows that respond favorably. Much of the benefit occurs after peak production.

After peak production occurs, one method of checking the economics of grain concentrate feeding is to determine the amount of milk necessary to pay for the cost of an extra pound of grain concentrate. For example, if milk is \$4.40 per hundredweight and the grain mixture is \$3.10 per hundredweight, then:

$$\frac{3.1¢/\text{lb grain mixture}}{4.4¢/\text{lb milk}} = 0.70 \text{ lb of milk}$$

necessary to pay
for the cost of an
extra pound of the
grain mixture.

By using local prices, the dairyman can determine this ratio and the profitable level of grain mixture to feed.

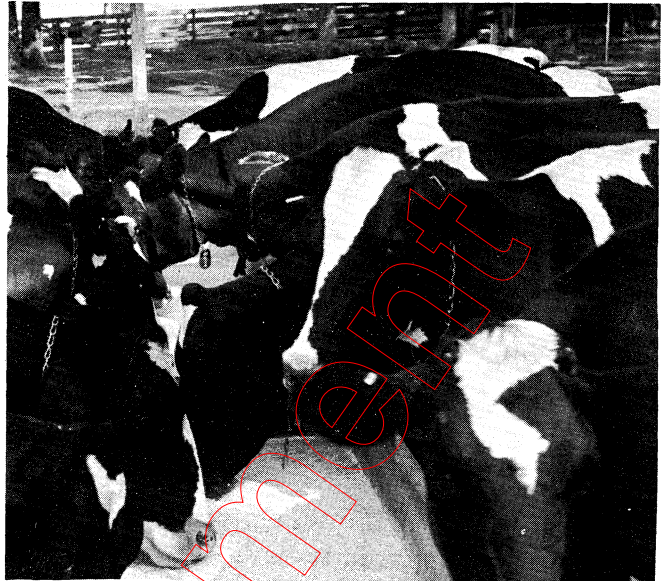
Feeding Problems and Methods of Feeding

One of the most common problems to-day is allowing time for cows to consume adequate grain concentrate. Because of milking parlor designs and variation in cows, the average daily grain concentrate consumption per cow may range from 9 to 16 pounds. This amount isn't adequate during the early months of lactation.

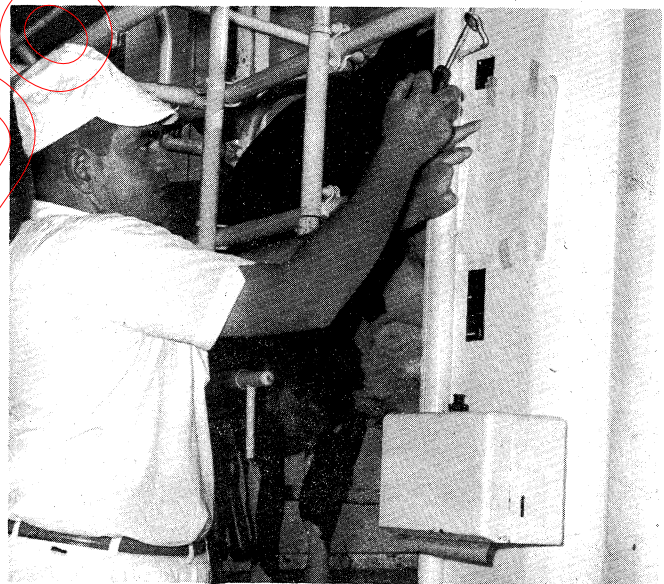
Some of the methods used to insure adequate grain concentrate consumption are:

1. Provide an extra feed lot for cows in early lactation and/or high production. Offer these cows additional grain concentrate as they leave the parlor after each milking. This method is preferred because only the best cows receive additional feed.

2. Provide all cows in the feed lot an extra amount of grain concentrate and adjust the amount fed in the parlor according to each cow's production. This system will allow some cows to receive too much feed and others not enough, but relieves management problems on some farms.



Dairymen can feed all cows the same amount each day in the feed-lot. Then, in the milking parlor, each cow's feed can be adjusted according to her production.



Summary

1. Lead-feeding will allow the cow to produce more milk because her energy needs are more adequately met early in lactation.
2. Lead-feeding requires individual cow attention during the dry period and early lactation. It should not be attempted under poor management conditions.
3. Milk and feed records are essential to determine each cow's peak production and the level of profitable grain concentrate feeding.
4. When properly fed, heavier levels of grain concentrates apparently have not increased health problems but have actually improved health in some cases.
5. Some arrangements for extra grain concentrate feeding should be made before lead-feeding is attempted.